Oct. 29, 1929. W. J. DE WITT 1,733,185

HEEL FOR FOOTWEAR

Filed Sept. 24, 1927

Fig. 1

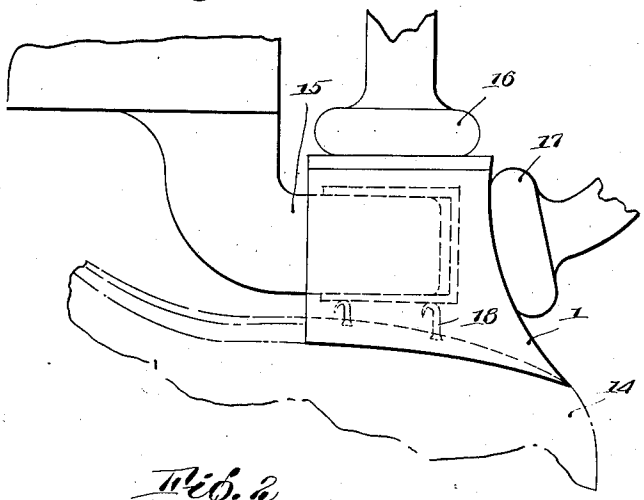


Fig. 3

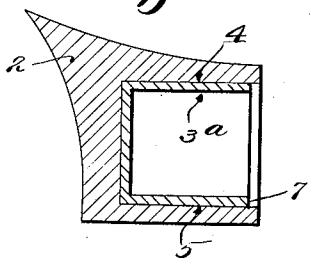


Fig. 4

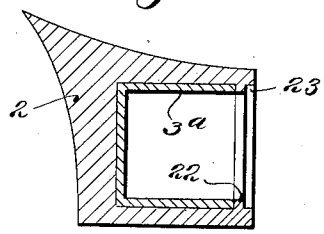


Fig. 2

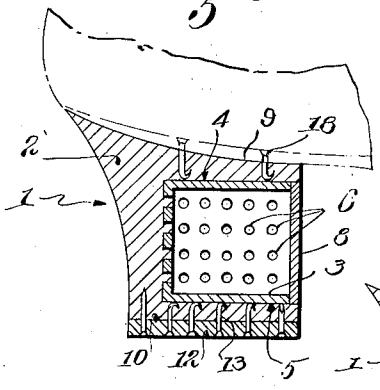


Fig. 10

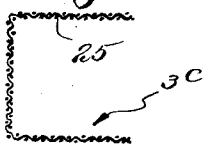


Fig. 5

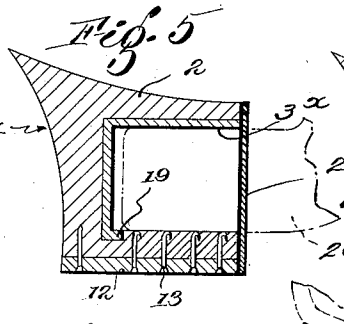


Fig. 6

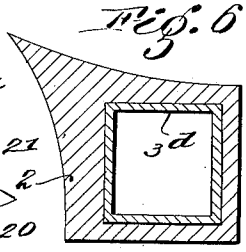


Fig. 7

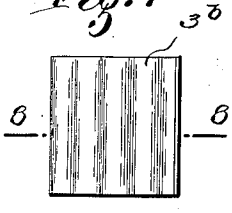


Fig. 9

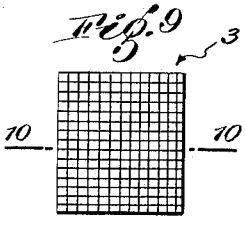


Fig. 11

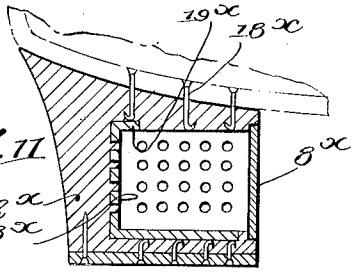
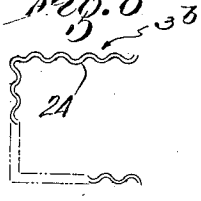


Fig. 8



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UNITED STATES PATENT OFFICE

WILLIAM J. DE WITT, OF AUBURN, NEW YORK, ASSIGNOR TO THE SHOE FORM CO., INC., OF AUBURN, NEW YORK, A CORPORATION OF NEW YORK

HEEL FOR FOOTWEAR

Application filed September 24, 1927. Serial No. 221,833.

This invention pertains to footwear and more particularly to heels for boots, shoes, etc., and constitutes an improvement upon the heel disclosed in my copending application Serial No. 104,366, filed April 24, 1926. In the aforesaid application I have disclosed a hollow heel formed by molding, pressure or otherwise from suitable material, for example celluloid, and in said application I have pointed out some of the advantages of such heels as compared with solid heels made of wood or built up from lifts of leather, etc. In accordance with the present invention I retain all of the advantages set forth in my aforesaid application together with additional beneficial features, among which may be mentioned increased strength and ability to withstand high temperatures without permanent deformation.

In the accompanying drawings I have illustrated various desirable embodiments of the invention by way of example, and in the drawings

Fig. 1 is a fragmentary side elevation illustrating certain elements of a heel attaching machine and showing the improved heel in position for attachment to a shoe, the latter being indicated in broken lines;

Fig. 2 is a vertical section showing details of my improved heel and indicating its position with respect to a shoe, the latter being shown in broken lines;

Fig. 3 is a vertical section showing a slightly modified form of heel;

Figs. 4, 5 and 6 are also vertical sections showing further modifications;

Fig. 7 is a side elevation showing one desirable form of core member adapted to constitute an element of the improved heel;

Fig. 8 is a section substantially on the line 8—8 of Fig. 7;

Fig. 9 is a side elevation of a further modified form of core member;

Fig. 10 is a section on the line 10—10 of Fig. 9; and

Fig. 11 is a section similar to Fig. 2 illustrating a further modification.

Referring to the drawings, the numeral 1 designates generally the improved heel which may have any desired external shape in accordance with the style of shoe to which it is to be attached. As here shown this heel has a substantially straight breast surface and is of the style commonly known as a Cuban heel. In accordance with the present invention my improved heel comprises an outer body portion or shell 2 which may be made of any suitable material such, for example, as celluloid, a phenol condensation product, hard rubber, paper or paper pulp,—such plastic or moldable materials being shaped to the desired configuration by molding or pressure, or it may be shaped from wood or any other suitable material by appropriate means. This body portion or shell 2 is hollow, having an internal cavity similar to the heel described in my aforesaid application. Conveniently this cavity opens at the breast surface of the heel, although conceivably it may open at some other point and under some circumstances may be permanently and completely closed.

Some of the materials which may be conveniently be used in making heels are not as strong as might be desired, particularly when exposed to such high temperatures as may occur when the heel is worn in hot climates, and for this reason in accordance with the present invention I provide the heel with internal reinforcing means, preferably in the form of a hollow box-like core 3. This core may be of any desired material providing the requisite strength and stiffness, but for the intended purpose I find that metal is quite desirable since it possesses high strength without excessive weight. Since the core is relatively small and of more or less box-like form, it is usually sufficiently strong if made of one of the softer metals such, for example, as aluminum or copper, aluminum being particularly desirable by reason of its light weight. However, for certain purposes hereinafter more fully referred to I may prefer to employ a harder metal such, for example, as steel.

As shown the upper surface 4 of the core is substantially flat and constitutes a nail clenching element as hereafter described. Likewise the lower surface 5 of the core may also be flat and constitutes a clenching sur-

face for the fasteners which hold the top lift in place.

In order firmly to unite the core and outer shell 2 I may, if desired, provide the side walls at least of the core with perforations or openings 6, and when the outer shell 2 is made by molding or pressure small portions of the material of the outer shell enter these openings in the core and interlock therewith, thus very securely uniting the parts.

In accordance with one desirable construction the forward edge 7 of the core, as more clearly illustrated in Fig. 3, is spaced rearwardly a slight distance from the breast surface of the shell 2, thus providing a rabbet or recess adapted to receive the edges of a cover plate 8. This cover plate may be of any suitable material, and after the heel has been attached to the shoe, as will be described hereinafter, this cover plate is placed in position and secured by means of adhesive or in any other desired manner. Obviously if the opening leading to the cavity in the shell is at some other part of the heel, the recess and and cover plate will be located correspondingly.

In making the heel, the upper surface 4 of the core is spaced a suitable distance below the seat surface 9 of the shell 2 and in the same way the lower surface 5 of the core is spaced a suitable distance above the lower surface 10 of the shell. If desired the heel may be provided with a top lift 12 of suitable material adapted to give the desired finish and to provide a good wearing surface. This top lift may thus be of leather, rubber or the like, and is secured in position by means of fasteners 13. In accordance with the present arrangement these fasteners may be, and preferably are, tacks or nails rather than the usual slugs and when driven, their points come into contact with the lower surface 5 of the core, and by reason of the hardness of the latter these points are turned and clenched, as indicated in Fig. 2, thus very securely uniting the top lift to the body of the heel.

In attaching the heel to the shoe, the latter, indicated at 14 in Fig. 1, may be mounted upon the jack of a heeling machine of usual type and the heel 1 is placed upon the heel seat of the shoe. Preferably, although not necessarily, the nailing machine is provided with an anvil 15 adapted to enter the cavity within the core 3, while the heel is held in position during nailing by the usual clamps 16 and 17. The nails 18 are driven upwardly through the sole of the shoe and into the heel, and as the points of the nails come into contact with the surface 4 of the core they are turned and clenched, thus securely holding the heel in position. If the core 3 be suitably stiff and hard, it is not necessary to insert the anvil 15 during the nailing operation, although I prefer to employ the anvil since it permits me to use a core of thinner material than would be necessary were the core alone depended upon to turn the points of the nails. After the heel has been attached to the shoe as above described the cover plate 8 is placed in position, and if necessary the outer surfaces of the heel may be subjected to any desired finishing operation. Ordinarily if the body portion 2 of the heel be made of celluloid or some similar material little finishing is necessary, but when other materials are employed, such for example as wood, it may be desirable either before attaching the heel or after attaching it to provide the heel with a suitable covering such, for example, as leather, paint, celluloid or the like.

In Fig. 3 I have illustrated a somewhat simpler form of core, such core 3^a being without the perforations above described but being in other respects similar to the core 3 shown in Fig. 2.

In Fig. 4 the core 3^a, which is similar to the core shown in Fig. 3, is set back further from the breast surface of the heel and the material of the outer shell 2 is permitted to project, as shown at 22, in front of the edge of the core so as to hold the latter securely in position. In this instance the outer shell 2 is provided with a recess or rabbet at 23 for the reception of the cover member in the same way as above described.

In Fig. 5 the core 3 is open at its lower side as well as at its front, except for a narrow flange 19 which is provided to facilitate the proper location of the core within the outer shell, and its forward edge is flush with the breast surface of the heel. When a core such as shown in Fig. 5 is employed, an anvil 20 is introduced into the cavity within the core during the driving of the top lift fasteners 13, the latter being clenched and turned against the lower surface of the anvil. After this heel has been attached to the shoe, a cover plate 21 may be applied to the breast surface of the heel, such cover plate, as here shown, engaging the breast surface of the shell 2 and extending to the edges of the latter at all sides. This cover may be secured by adhesive or otherwise and may be finished in any suitable manner to provide the desired external appearance. Obviously this arrangement of cover may be used with any of the types of core herein described, if desired, while, on the other hand, the core of Fig. 5 may be set into the outer shell to accommodate any of the other forms of cover shown.

In Fig. 6 I have illustrated a core 3^d which is completely enclosed within the outer shell or body 2. Such a core may be used if it be of sufficiently hard and strong material to turn the points of the nails without the support furnished by an anvil, and the employment of such a core avoids the necessity of providing the heel with an independent cover plate.

In Figs. 7 and 8 I have illustrated a core 3^b having side walls which are corrugated

as indicated at 24. The alternate ribs and recesses of such wall have an interlocking action with the material of the outer shell, thus in the same way as the perforations shown in Fig. 2 helping to hold the parts in fixed assembled relation. In Figs. 9 and 10 I have shown a core 3^c whose side walls at least consist of a woven or reticulated fabric 25. The small openings in this core interlock with the material of the shell and thus hold the parts securely together.

When cores such as shown in Figs. 2, 7, 9 and 10 are used, the intimate union between the outer shell and the core provides a very substantial reinforcing effect for the outer shell so that even though the latter be of some material which is normally weak or resilient or which is softened by heat or moisture, the presence of the core will tend to keep the heel in proper shape and prevent it from spreading or buckling.

In Fig. 11 the core 3^x, the shell 2^x, and the cover plate 8^x are substantially like corresponding parts shown in Fig. 2 except that the core is open at its top except for a small positioning flange 19^x. When such a core is employed the attaching nails 18^x are clenched directly against the surface of the anvil. This arrangement is sometimes preferred as it lessens the amount of material used in making the core and avoids any possibility of loosening the core in the shell and thus lessening its reinforcing effect. Obviously the core may be left open at both top and bottom if desired.

My new heel thus has the advantage of lightness as compared with solid heels, it is readily and firmly attached to the shoe, it may be made of materials which have not previously been considered sufficiently strong and durable for shoe heels, it may readily be given the desired external contour and ornamental appearance, it may be attached by the use of usual means and mechanisms, and it may be made so cheaply as to compete with solid wood heels or other cheap forms of heel.

I claim:

1. A hollow shoe heel comprising a body of material through which a heel attaching nail may be driven, and a nail clenching element, hard enough to turn the point of the shoe nail, embedded in said material.

2. A shoe heel comprising a body of material through which a heel attaching nail may be driven, said body of material having a cavity therein, and a nail clenching element of relatively hard material lining one wall at least of said cavity.

3. A shoe heel comprising a hollow metallic core embedded in an outer shell of celluloid, said core having a nail clenching upper surface spaced from the upper or seat surface of the heel.

4. A shoe heel comprising an outer shell and a hollow reinforcing core, said shell and core having registering openings, the edge of the opening in the outer shell being rabbeted to provide a marginal recess, and a cover adapted to have its edge seated in said recess and to close said aperture.

5. A shoe heel comprising a hollow metal core provided with nail clenching surfaces at top and bottom, an outer shell embracing said core, a top lift engaging the lower surface of said outer shell, and fastening elements passing through said top lift and into the material of the shell, said fastening elements being clenched against the lower surface of the core.

6. A shoe heel comprising a hollow box-like core open at one side, an outer shell embracing said core, said shell having an opening registering with the open side of the core, the material of the shell overlapping the edges of the core at the open side of the latter, and means for closing the opening in the outer shell.

7. A shoe heel comprising a hollow metallic core having substantially flat nail clenching surface at its top and bottom, an outer shell of celluloid, said outer shell and a portion at least of the side walls of the core having interlocking complemental elements, the shell and core having registering openings at the breast surface of the heel, means closing the opening in the outer shell, a top lift engaging the under surface of the outer shell, clenched fastening means holding the top lift in place, and clenched fastener means engaging the upper part of the shell for holding the heel in place.

8. A shoe heel comprising a hollow box-like core and an outer shell embracing the core, one side at least of the core being substantially open and spaced from the outer surface of the shell, and clenched fasteners engaging the material of the shell at the open side of the core.

9. A shoe heel comprising a hollow core and an outer shell embracing the core, the upper side of the core being substantially open and spaced from the seat surface of the heel, and fasteners extending downwardly into the material of the shell, said fasteners being clenched at their lower ends.

Signed by me at Auburn, New York, this 19th day of September, 1927.

WILLIAM J. DE WITT.